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human CAP-1

60
MLSHNTMMKQRKQQATAIMKEVHGNDVDGMDLGKKVSIPRDIMLEELSHLSNRGARLFKM

120
RQRRSDKYTFENFQYQSRAQINHSIAMQNGKVDGSNLEGGSQQAPLTPPNTPDPRSPPNP

180
DNIAPGYSGPLKEIPPEKFNTTAVPKYYQSPWEQAISNDPELLEALYPKLFKPEGKAELP

240
DYRSFNRVATPFGGFEKASRMVKFKVPDFELLLLTDPRFMSFVNPLSGRRSFNRTPKGWI

SENIPIVITTEPTDDTTVPESEDL

FIG. 1A

mouse CAP-1

60
MLSHSAMVKQRKQQASAITKEIHGHDVDGMDLGKKVSIPRDIMIEELSHFSNRGARLFKM

120
RQRRSDKYTFENFQYESRAQINHNIAMQNGRVDGSNLEGGSQQGPSTPPNTPDPRSPPNP

180
ENIAPGYSGPLKEIPPERFNTTAVPKYYRSPWEQAIGSDPELLEALYPKLFKPEGKAELR

240
DYRSFNRVATPFGGFEKASKMVKFKVPDFELLLLTDPRFLAFANPLSGRRCFNRAPKGWV

SENIPVVITTEPTEDATVPESDDL

FIG. 1B

human CAP-2

```
                                                                  60
MPLSGTPAPNKKRKSSKLIMELTGGGQESSGLNLGKKISVPRDVMLEELSLLTNRGSKMF

                                                                 120
KLRQMRVEKFIYENHPDVFSDSSMDHFQKFLPTVGGQLGTAGQGFSYSKSNGRGGSQAGG

                                                                 180
SGSAGQYGSDQQHHLGSGSGAGGTGGPAGQAGRGGAAGTAGVGETGSGDQAGGEGKHITV

                                                                 240
FKTYISPWERAMGVDPQQKMELGIDLLAYGAKAELPKYKSFNRTAMPYGGYEKASKRMTF

QMPKFDLGPLLSEPLVLYNQNLSNRPSFNRTPIPWLSSGEPVDYNVDIGIPLDGETEEL
```

FIG. 1C

mouse CAP-2

```
                                                                  60
MPLSGTPAPNKRRKSSKLIMELTGGGRESSGLNLGKKISVPRDVMLEELSLLTNRGSKMF

                                                                 120
KLRQMRVEKFIYENHPDVFSDSSMDHFQKFLPTVGGQLETAGQGFSYGKGSSGGQAGSSG

                                                                 180
SAGQYGSDRHQQGSGFGAGGSGGPGGQAGGGGAPGTVGLGEPGSGDQAGGDGKHVTVFKT

                                                                 240
YISPWDRAMGVDPQQKVELGIDLLAYGAKAELPKYKSFNRTAMPYGGYEKASKRMTFQMP

KFDLGPLLSEPLVLYNQNLSNRPSFNRTPIPWLSSGEHVDYNVDVGIPLDGETEEL
```

FIG. 1D

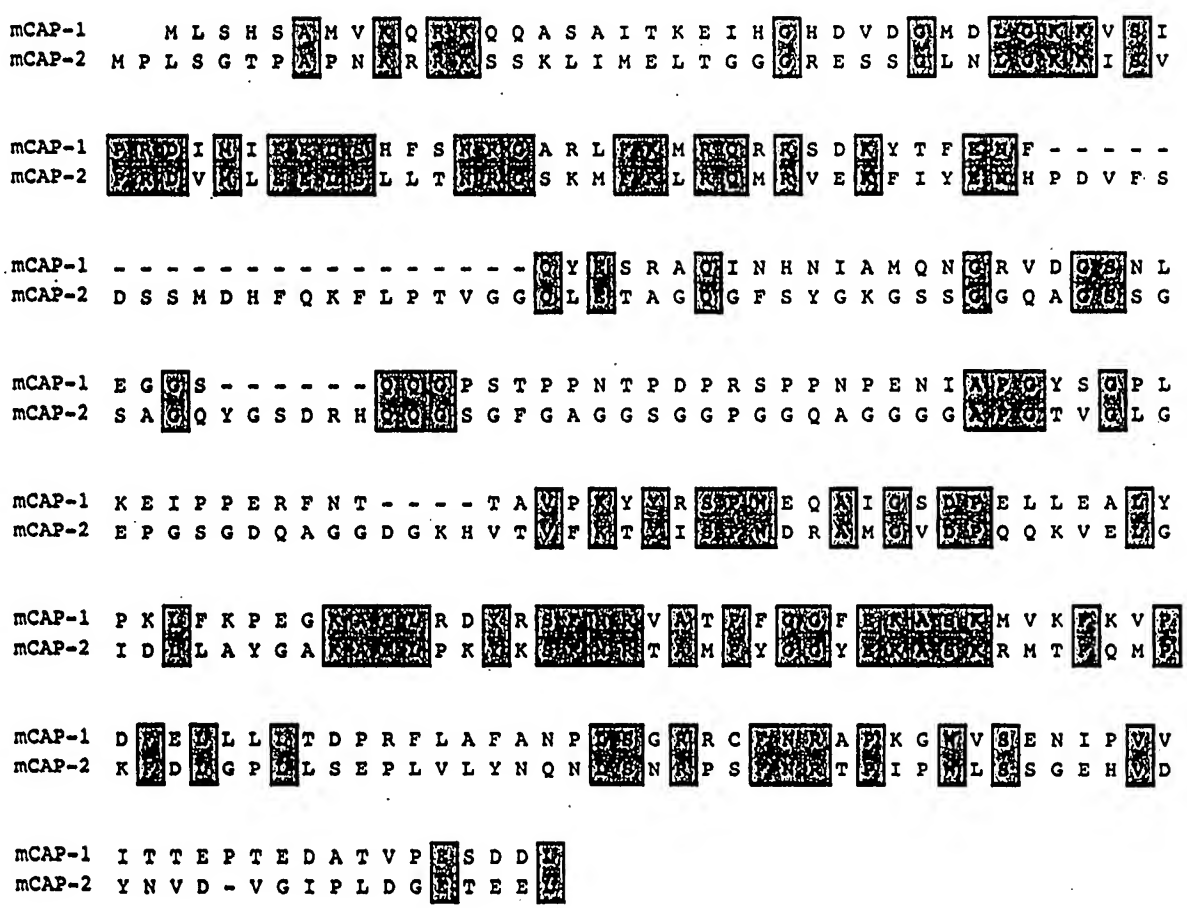


FIG. 1E

human CAP-1

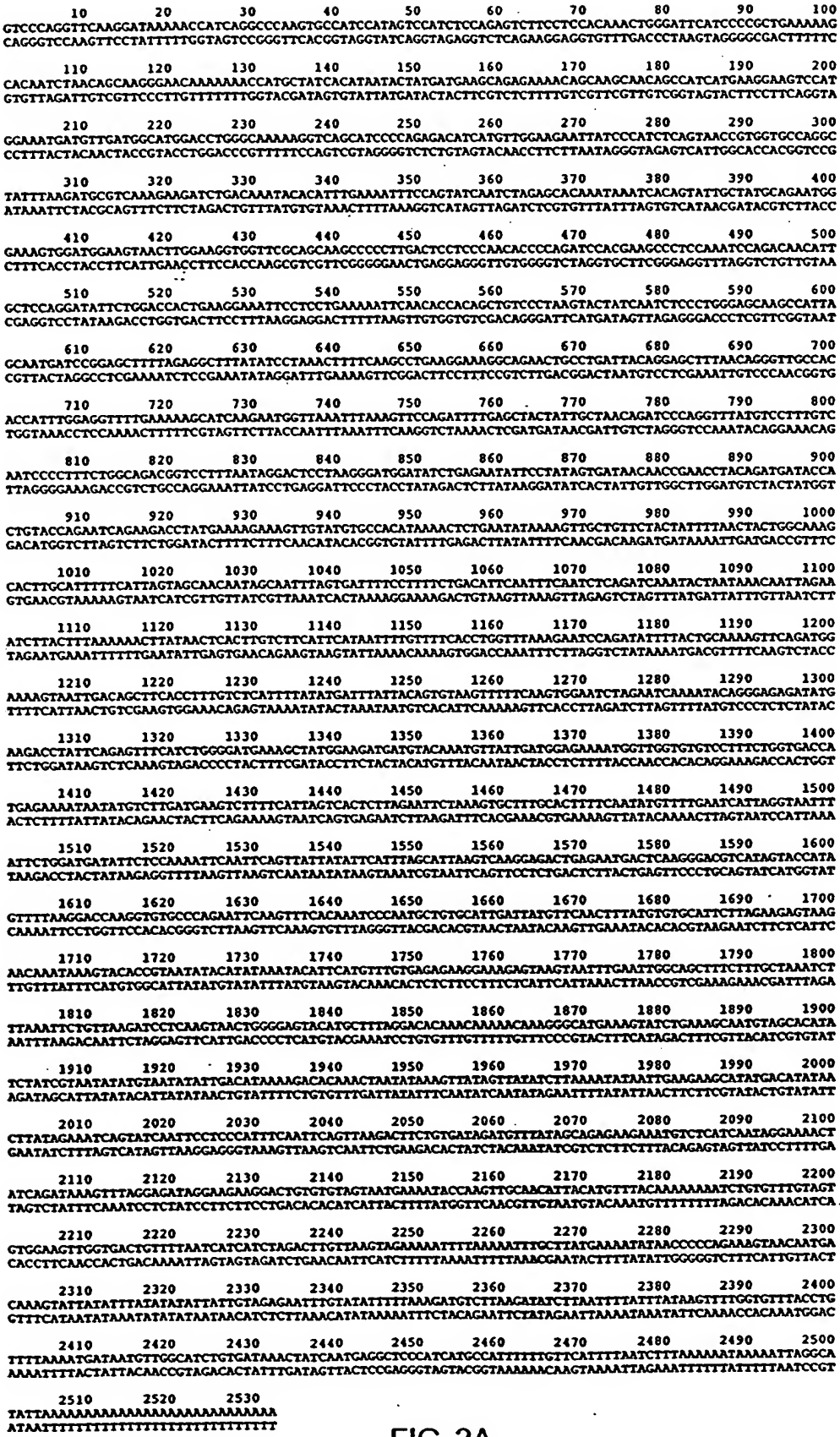


FIG. 2A

mouse CAP-1

```
        10         20         30         40         50         60         70         80         90        100
ATTCGGCACATGGGATCGAGGGACCATGCCGTTCCAGGTTCAAGGATAAAACCCATTGGGCCATAGTGCCGTCATATTCCACCTTCAGTGCCTTCCTCCA
TAAGCCGTGTACCCTAGCTCCCTGGTACGGCAAGGTCCAAGTTCCTATTTTGGGTAACCCGGTATCACGGCAGTATAAGGTGGAAGTCACGGAAGGAGGT

       110        120        130        140        150        160        170        180        190        200
CAATTGGGATTCACCCCTGCTGAAAAGCGCACGCTGACAGCAAGGGAACAAAAAACTATGCTATCACATAGTGCCATGGTGAAGCAAAGGAAACAGCAAG
GTTAACCCTAAGTGGGGACGACTTTTCGCGTGCGACTGTCGTTCCCTTGTTTTTTGATACGATAGTGTATCACGGTACCACTTCGTTTCCTTTGTCGTTC

       210        220        230        240        250        260        270        280        290        300
CATCAGCCATCACGAAGGAAATCCATGGACATGATGTTGACGGCATGGACCTGGGCAAAAAAGTTAGCATCCCCAGAGACATCATGATAGAAGAATTGTC
GTAGTCGGTAGTGCTTCCTTTAGGTACCTGTACTACAACTGCCGTACCTGGACCCGTTTTTTCAATCGTAGGGGTCTCTGTAGTACTATCTTCTTAACAG

       310        320        330        340        350        360        370        380        390        400
CCATTTCAGTAATCGTGGGGCCAGGCTGTTTAAGATGCGTCAAAGAAGATCTGACAAATACACCTTTGAAAATTTCCAGTATGAATCTAGAGCACAAATT
GGTAAAGTCATTAGCACCCCGGTCCGACAAATTCTACGCAGTTTCTTCTAGACTGTTTATGTGGAAACTTTTAAAGGTCATACTTAGATCTCGTGTTTAA

       410        420        430        440        450        460        470        480        490        500
AATCACAATATCGCCATGCAGAATGGGAGAGTTGATGGAAGCAACCTGGAAGGTGGCTCACAGCAAGGCCCCTCAACTCCGCCCAACACCCCCGATCCAC
TTAGTGTTATAGCGGTACGTCTTACCCTCTCAACTACCTTCGTTGGACCTTCCACCGAGTGTCGTTCCGGGGAGTTGAGGCGGGTTGTGGGGGCTAGGTG

       510        520        530        540        550        560        570        580        590        600
GAAGCCCCCCAAATCCAGAGAACATCGCACCAGGATATTCTGGACCACTGAAGGAAATTCCTCCTGAAAGGTTTAACACGACGGCCGTTCCTAAGTACTA
CTTCGGGGGGTTTAGGTCTCTTGTAGCGTGGTCCTATAAGACCTGGTGACTTCCTTTAAGGAGGACTTTCCAAATTGTGCTGCCGGCAAGGATTCATGAT

       610        620        630        640        650        660        670        680        690        700
CCGGTCTCCATGGGAGCAGGCGATTGGCAGCGATCCGGAGCTCCTGGAGGCTTTGTACCCAAAACTTTTCAAGCCTGAAGGAAAAGCAGAACTGCGGGAT
GGCCAGAGGTACCCTCGTCCGCTAACCGTCGCTAGGCCTCGAGGACCTCCGAAACATGGGTTTTGAAAAGTTCGGACTTCCTTTTCGTCTTGACGCCCTA

       710        720        730        740        750        760        770        780        790        800
TACAGGAGCTTTAACAGGGTTGCCACTCCATTTGGAGGTTTTGAAAAAGCATCAAAAATGGTCAAATTCAAAGTTCCAGATTTTGAACTACTGCTGCTGA
ATGTCCTCGAAATTGTCCCAACGGTGAGGTAAACCTCCAAAACTTTTTCGTAGTTTTTACCAGTTTAAGTTTCAAGGTCTAAAACTTGATGACGACGACT

       810        820        830        840        850        860        870        880        890        900
CAGATCCCAGGTTCTTGGCCTTTGCCAATCCTCTTTCGGGCAGACGATGCTTTAACAGGGCGCCAAAGGGGTGGGTATCTGAGAATATCCCCGTCGTGAT
GTCTAGGGTCCAAGAACCGGAAACGGTTAGGAGAAAGCCCGTCTGCTACGAAATTGTCCCGCGGTTTCCCCACCCATAGACTCTTATAGGGGCAGCACTA

       910        920        930        940        950        960        970        980
CACAACTGAGCCTACAGAAGACGCCACTGTACCGAATCAGATGACCTGTGAGAGGGAAGCTGGGGATGCCACAGGAAGTTC
GTGTTGACTCGGATGTCTTCTGCGGTGACATGGCCTTAGTCTACTGGACACTCTCCCTTCGACCCCTACGGTGTCCTTCAAG
```

FIG. 2B

human CAP-2

```
                                                                                                             100
CGGTCACAGC AGCTCAGTCC TCCAAAGCTG CTGGACCCCA GGGAGAGCTG ACCACTGCCC GAGCAGCCGG CTGAATCCAC CTCCACAATG CCGCTCTCAG
                                                                                                             200
GAACCCCGGC CCCTAATAAG AAGAGGAAAT CCAGCAAGCT GATCATGGAA CTCACTGGAG GTGGACAGGA GAGCTCAGGC TTGAACCTGG GCAAAAAGAT
                                                                                                             300
CAGTGTCCCA AGGGATGTGA TGTTGGAGGA ACTGTCGCTG CTTACCAACC GGGGCTCCAA GATGTTCAAA CTGCGGCAGA TGAGGGTGGA GAAGTTTATT
                                                                                                             400
TATGAGAACC ACCCTGATGT TTTCTCTGAC AGCTCAATGG ATCACTTCCA GAAGTTCCTT CCAACAGTGG GGGGACAGCT GGGCACAGCT GGTCAGGGAT
                                                                                                             500
TCTCATACAG CAAGAGCAAC GGCAGAGGCG GCAGCCAGGC AGGGGGCAGT GGCTCTGCCG GACAGTATGG CTCTGATCAG CAGCACCATC TGGGCTCTGG
                                                                                                             600
GTCTGGAGCT GGGGGTACAG GTGGTCCCGC GGGCCAGGCT GGCAGAGGAG GAGCTGCTGG CACACAGGGG GTTGGTGAGA CAGGATCAGG AGACCAGGCA
                                                                                                             700
GGCGGAGAAG GAAAACATAT CACTGTGTTC AAGACCTATA TTTCCCCATG GGAGCGAGCC ATGGGGGTTG ACCCCCAGCA AAAAATGGAA CTTGGCATTG
                                                                                                             800
ACCTGCTGGC CTATGGGGCC AAAGCTGAAC TTCCCAAATA TAAGTCCTTC AACAGGACGG CAATGCCCTA TGGTGGATAT GAGAAGGCCT CCAAACGCAT
                                                                                                             900
GACCTTCCAG ATGCCCAAGT TTGACCTGGG GCCCTTGCTG AGTGAACCCC TGGTCCTCTA CAACCAAAAC CTCTCCAACA GGCCTTCTTT CAATCGAACC
                                                                                                            1000
CCTATTCCCT GGCTGAGCTC TGGGGAGCCT GTAGACTACA ACGTGGATAT TGGCATCCCC TTGGATGGAG AAACAGAGGA GCTGTGAGGT GTTTCCTCCT
CTGATTTGCA TCATTTCCCC TCTCTGGCTC CAATTTGGAG A
```

FIG. 2C

mouse CAP-2

```
                                                                                                    100
GCCGGGGAGA GCCGACCACC AACTGAGCAG CTGGTCAGAT CCACCTCCAC CATGCCACGC TCAGGAACCC CGGCCCCTAA CAAGAGGAGG AAGTCAAGCA
                                                                                                    200
AACTGATTAT GGAGCTCACT GGAGGTGGCC GGGAGAGCTC AGGCCTGAAC CTGGGCAAGA AGATCAGTGT CCCAAGGGAT GTGATGTTGG AGGAGCTGTC
                                                                                                    300
CCTTCTTACC AACCGAGGCT CCAAGATGTT CAAGCTACGG CAGATGCGGG TGGAGAAATT TATCTATGAG AATCACCCCG ATGTTTTCTC TGACAGCTCA
                                                                                                    400
ATGGATCACT TCCAGAAGTT TCTTCCCACA GTGGGAGGAC AGCTGGAGAC AGCTGGTCAG GGCTTCTCAT ATGGCAAGGG CAGCAGTGGA GGCCAGGCTG
                                                                                                    500
GCAGCAGTGG CTCTGCTGGA CAGTATGGCT CTGACCGTCA TCAGCAGGGC TCTGGGTTTG GAGCTGGGGG TTCAGGTGGT CCTGGGGGCC AGGCTGGTGG
                                                                                                    600
AGGAGGAGCT CCTGGCACAG TAGGGCTTGG AGAGCCCGGA TCAGGTGACC AGGCAGGTGG AGATGGAAAA CATGTCACTG TGTTCAAGAC TTATATTTCC
                                                                                                    700
CCATGGGATC GGGCCATGGG GGTTGATCCT CAGCAAAAAG TGGAACTTGG CATTGACCTA CTGGCATACG GTGCCAAAGC TGAACTCCCC AAATATAAGT
                                                                                                    800
CCTTCAACAG GACAGCAATG CCCTACGGTG GATATGAGAA GGCCTCCAAA CGCATGACCT TCCAGATGCC CAAGTTTGAC CTGGGGCCTC TGCTGAGTGA
                                                                                                    900
ACCCCTGGTC CTCTACAACC AGAACCTCTC CAACAGGCCT TCTTTCAATC GAACCCCTAT TCCCTGGTTG AGCTCTGGGG AGCATGTAGA CTACAACGTG
                                                                                                   1000
GATGTTGGTA TCCCCTTGGA TGGAGAGACA GAGGAGCTGT GAAGTGCCTC CTCCTGTCAT GTGCATCATT TCCCTTCTCT GGTTCCAATT TGAGAGTGGA
                                                                                                   1100
TGCTGGACAG GATGCCCCAA CTGTTAATCC AGTATTCTTG TGGCAATGGA GGGTAAAGGG TGGGGTCCGT TGCCTTTCCA CCCTTCAAGT TCCTGCTCCG
AAGCATCCCT CCTCACCAGC TCAGAGCTCC CATCCTGCTG TACCATATGG AATCTGCTCT TTTATGGAAT TTTCT
```

FIG. 2D

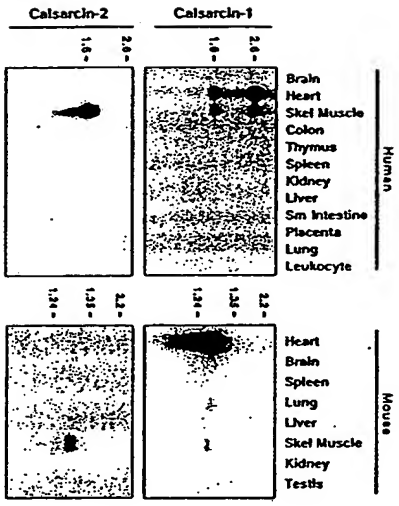

Calsarcin-2
Calsarcin-1
1.9
2.4
Brain
Heart
Skel Muscle
Colon
Thymus
Spleen
Kidney
Liver
Sm Intestine
Placenta
Lung
Leukocyte
Human
1.34
1.35
2.2
Heart
Brain
Spleen
Lung
Liver
Skel Muscle
Kidney
Testis
Mouse

FIG. 3

FIG. 4A

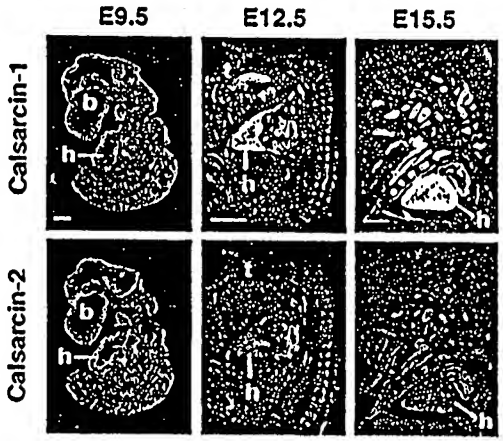


FIG. 4B

FIG. 4C

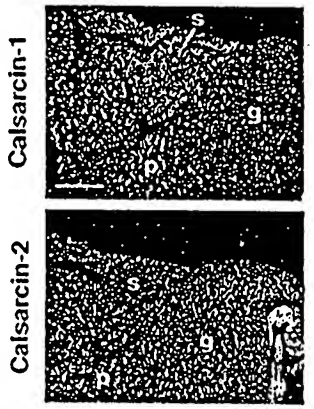


FIG. 4D

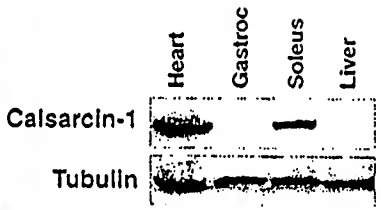
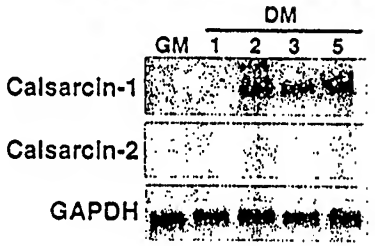


FIG. 4E



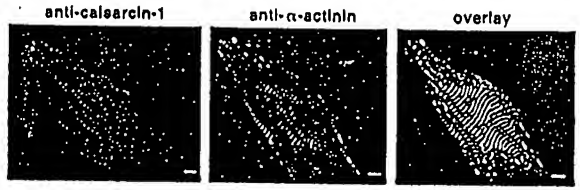

anti-calsarcin-1
anti-α-actinin
overlay

FIG. 5A


anti-calsarcin-1
anti-calcineurin
overlay

FIG. 5B

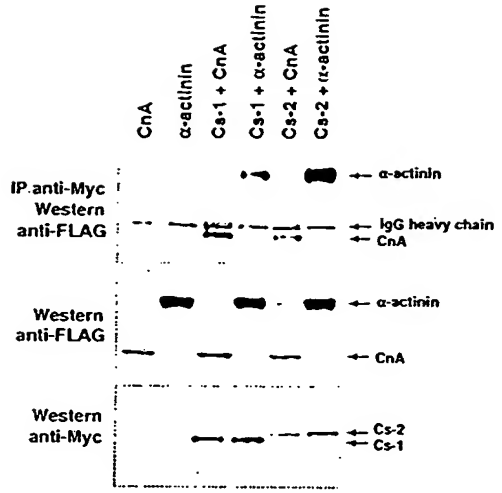


FIG. 6A

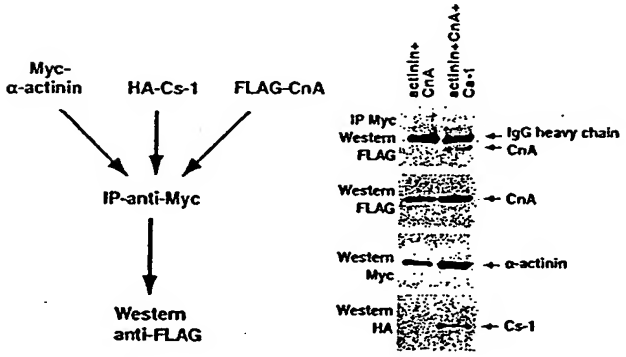


FIG. 6B

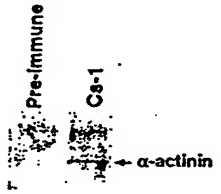


FIG. 6C

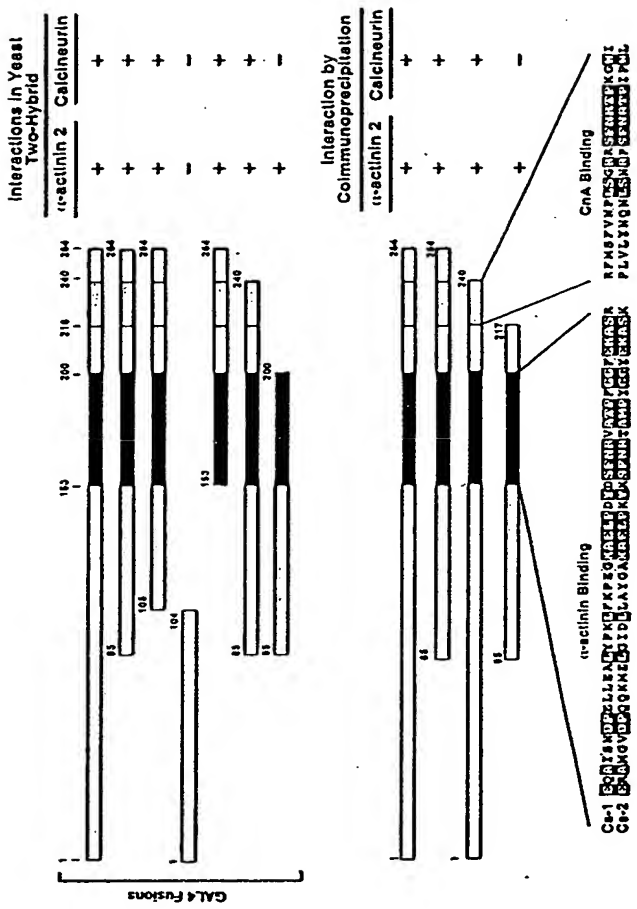

Interactions in Yeast Two-Hybrid
α-actinin 2
Calcineurin
GAL4 fusions
Interaction by Coimmunoprecipitation
α-actinin 2
Calcineurin
CnA Binding
α-actinin Binding

FIG. 7

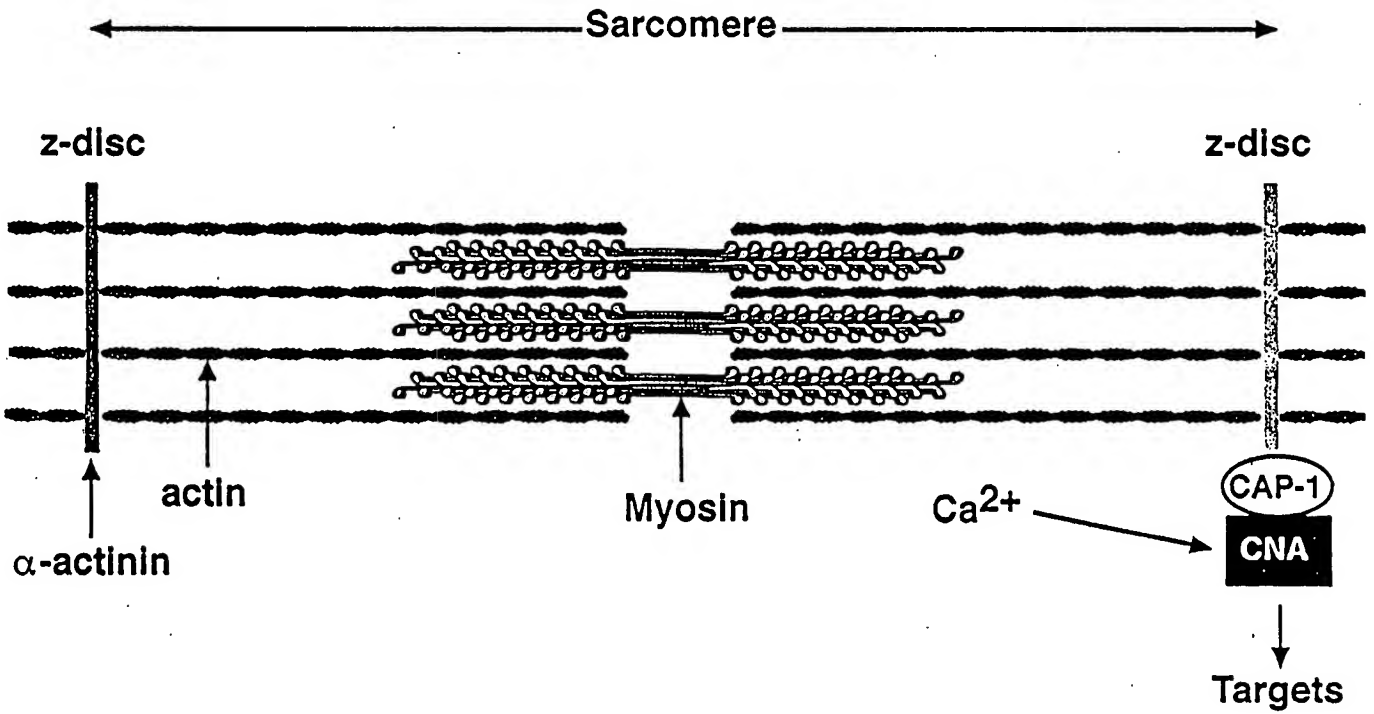

Sarcomere
z-disc
z-disc
actin
Myosin
α-actinin
Ca2+
CAP-1
CNA
Targets

FIG. 8

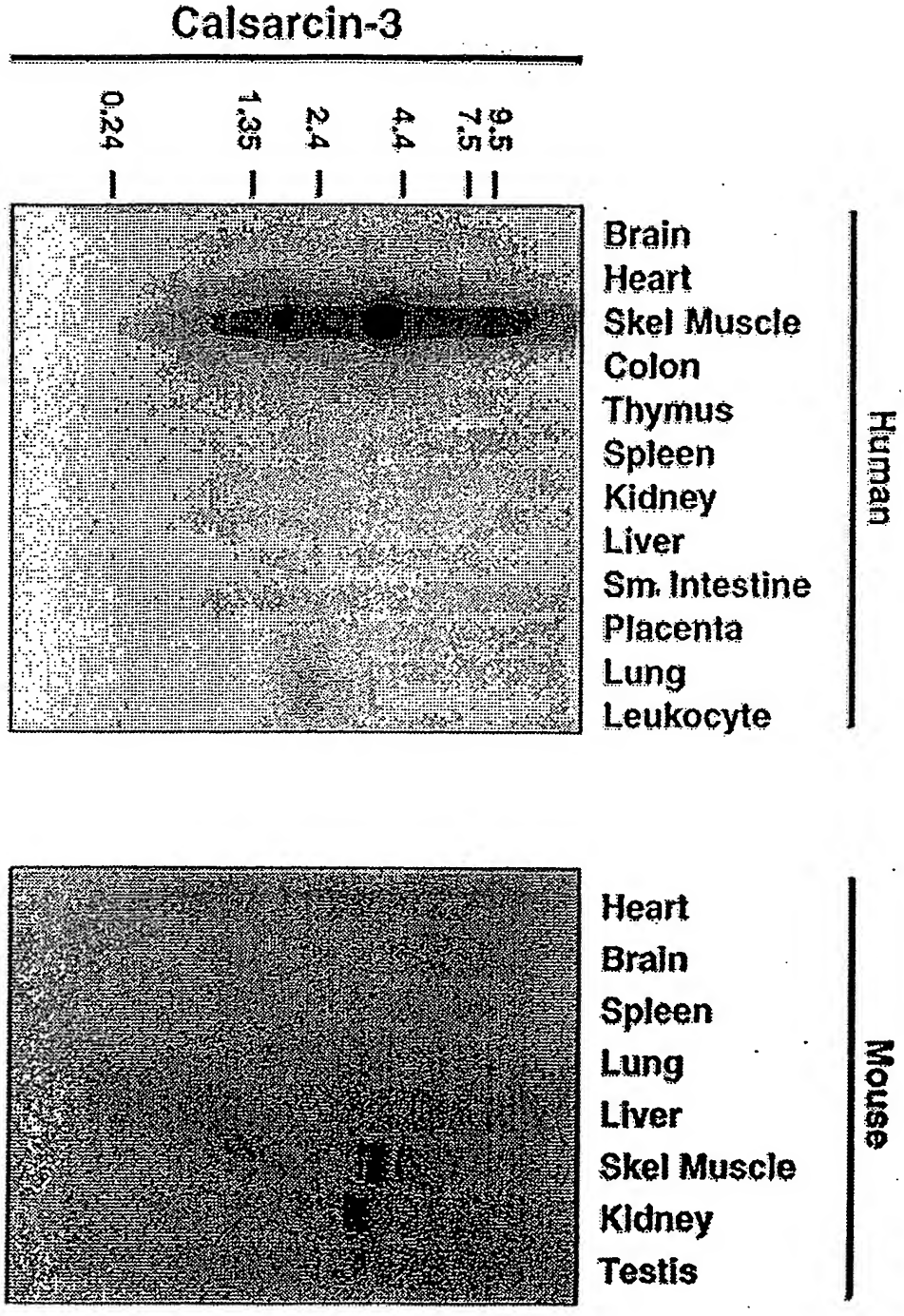

Calsarcin-3
0.24
1.35
2.4
4.4
9.5
7.5
Brain
Heart
Skel Muscle
Colon
Thymus
Spleen
Kidney
Liver
Sm. Intestine
Placenta
Lung
Leukocyte
Human
Heart
Brain
Spleen
Lung
Liver
Skel Muscle
Kidney
Testis
Mouse

FIG. 9

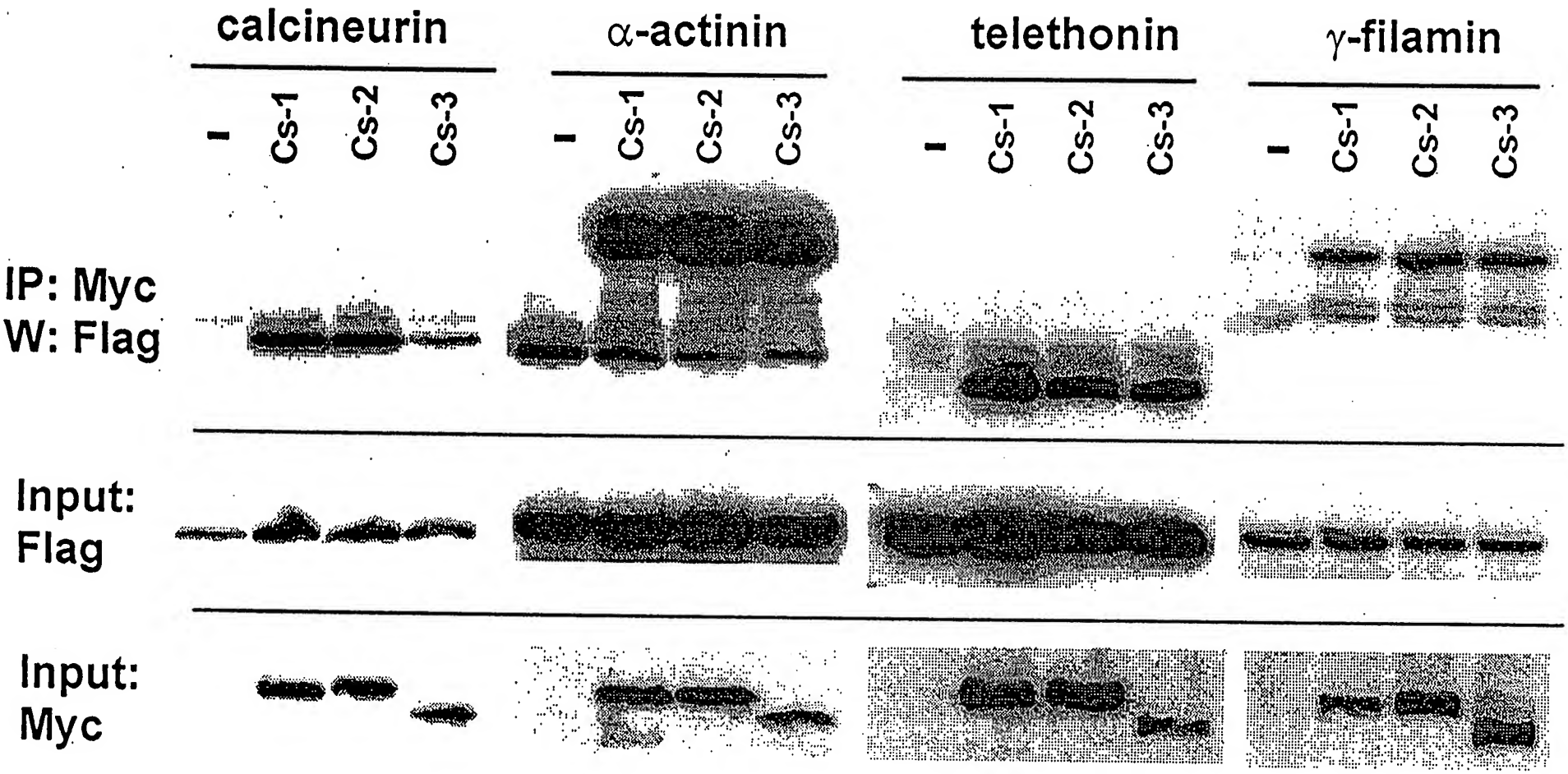

calcineurin
α-actinin
telethonin
γ-filamin
-
Cs-1
Cs-2
Cs-3
IP: Myc
W: Flag
Input:
Flag
Input:
Myc

FIG. 10

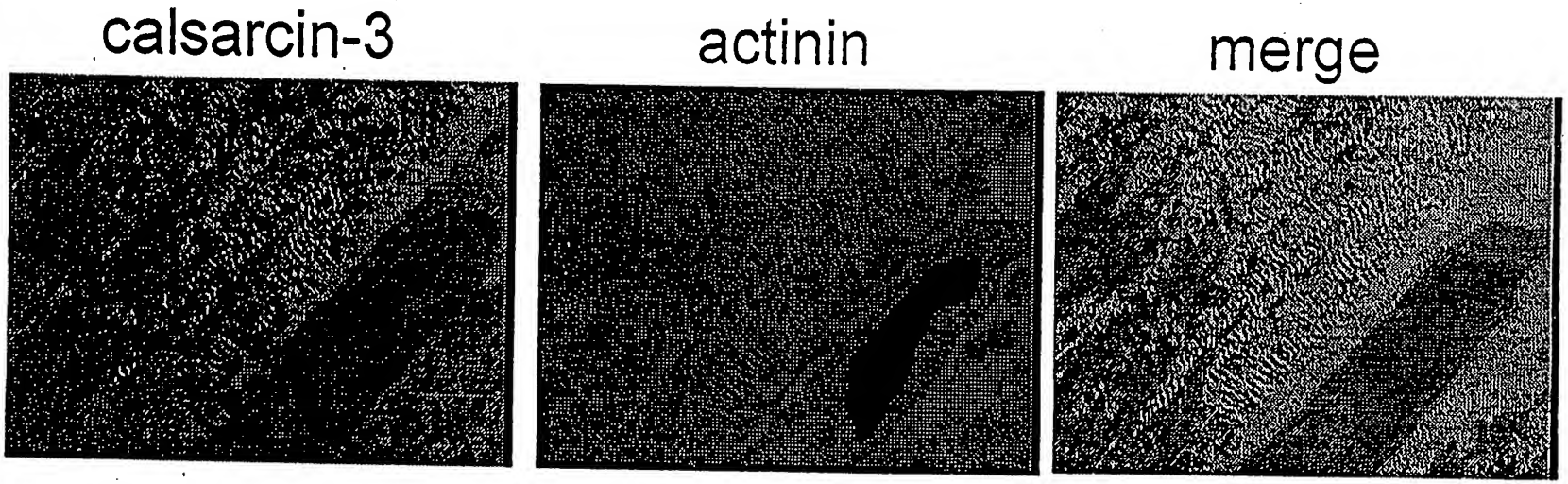
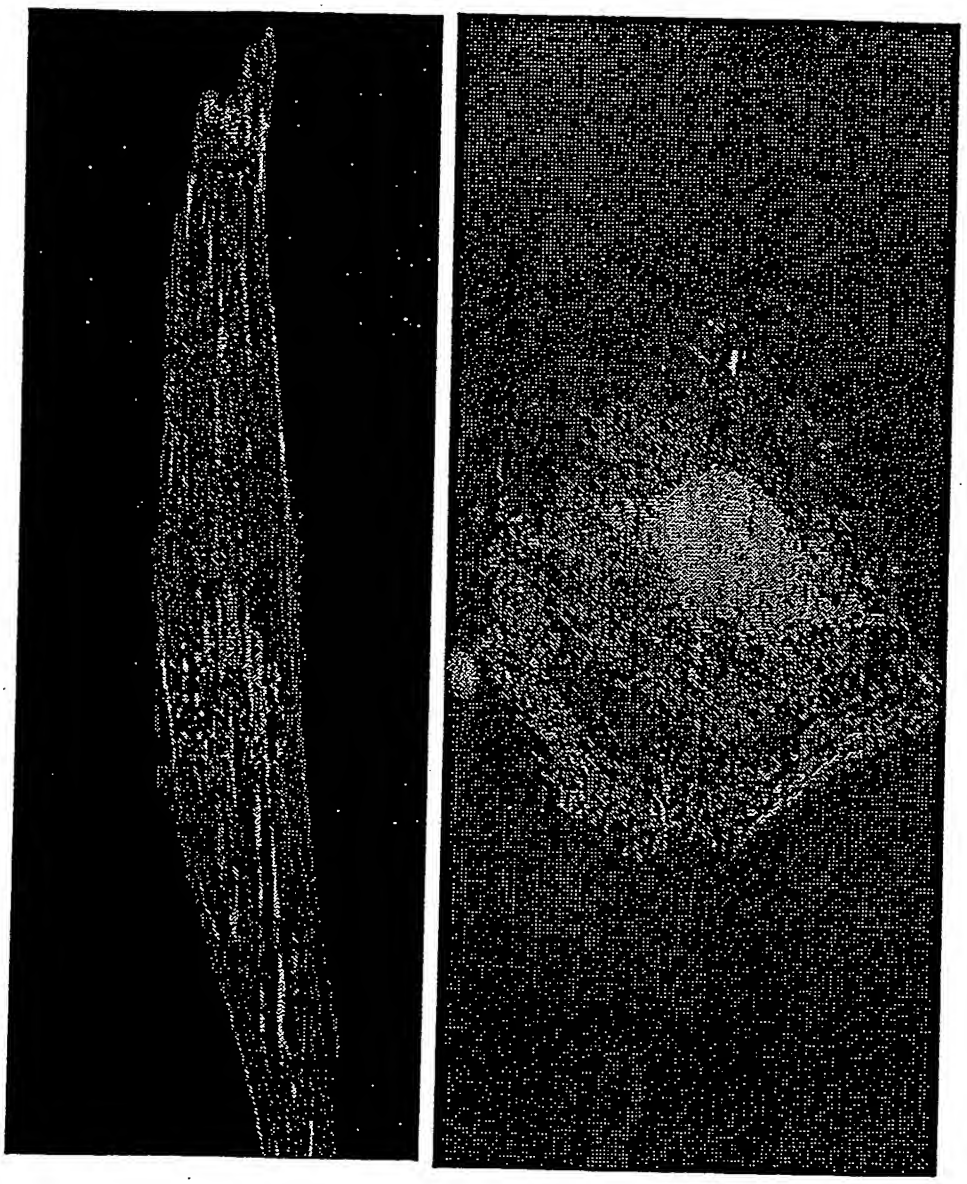


FIG. 11

FIG. 12



ClustalW Formatted Alignments

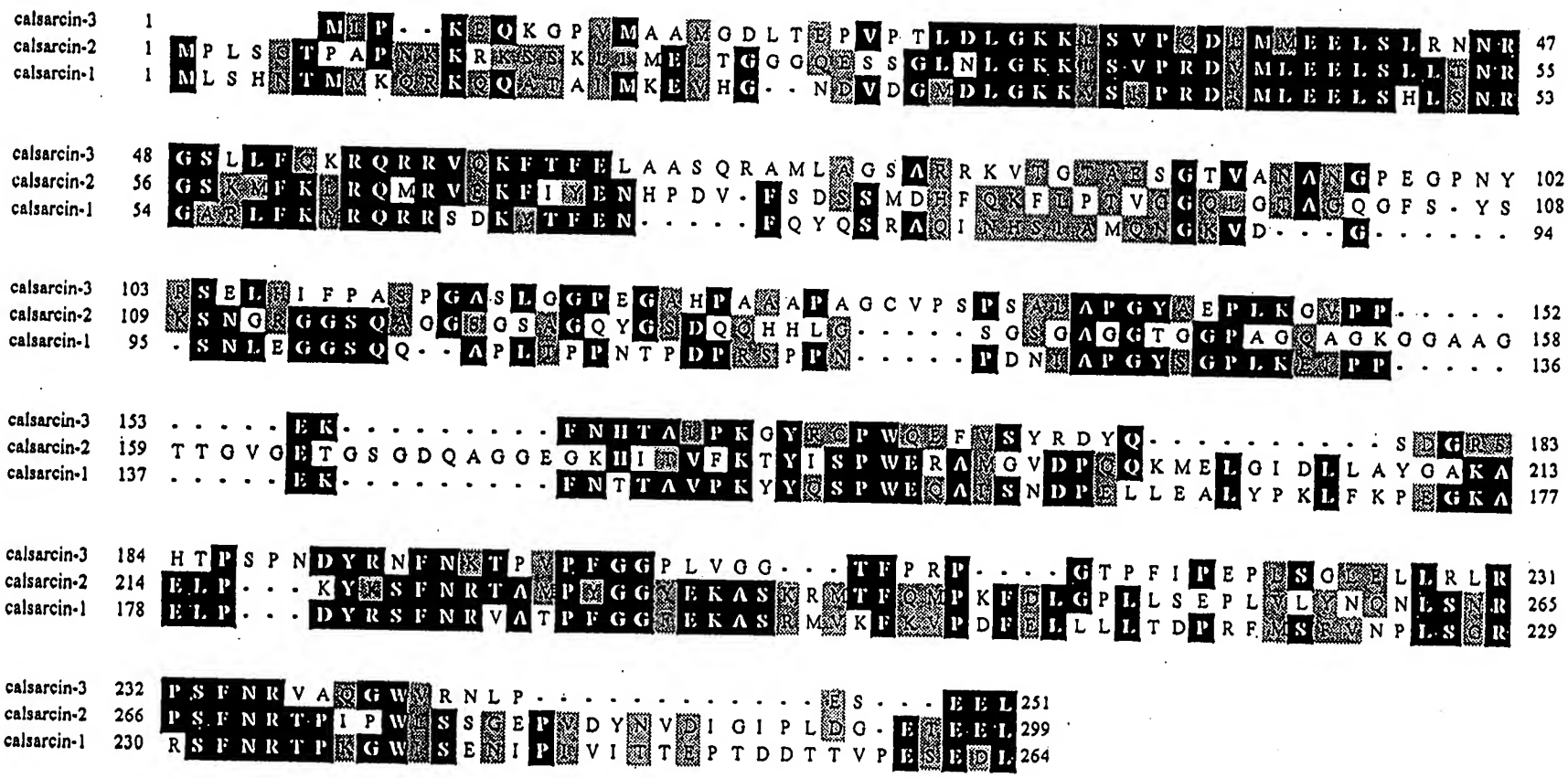


FIG. 13